From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: Mike Maloney <ac5p@ionet.net>
Subject: 304TL Amp Ckt Info?
Message-ID: <199610242315.SAA14465@mail.ionet.net>

A fellow gave me a nice looking 304-TL bottle and socket. Does anyone have
a proven circuit for one in Class C Amp mode? Anyone using one?
73/Mike

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: wb6zwc@ns.net
Subject: 651S1
Message-ID: <199610242156.OAA25004@tomcat.ns.net>

Software problem. Will the gentleman that was selling the Collins
651S1 give me a "call". I no longer have your electronic address.

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Allan Fritsche" <fritsche@msn.com>
Subject: Allied Y-726
Message-ID: <UPMAIL03.199610260030190662@msn.com>

Hi guys, won't bore you with the details of the ressurection of the little
R-100/a/Y-xxx. Indeed its the Y-726 as a picture of it is in the Nov , 1958
CQ Mag. Only that model had the Ant Tune control mounted above the
Dials, what a pain in the ass, need female fingers to tune and tune you have
to do on bandswitching. Works like a charm includling the Q-multiplier.
Did looose the xxx to 8 ohm output transformer during clean up detail. But
replaced with the only thing I had a 5000 to 3.5, Changed the cheapo speaker
to a Rat Shack 4 ohm Mobile unit. All Seems Well.
BTW, that little Q-M will really peak a signal and null out all the offending
OF's that talk for more then 5 minutes. (Just Kidding)

Talk Latter
Al
fritsche@msn.com

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: ks0f@i1.net (MIKE SANDERS)
Subject: BAs sighted in strange place today
Message-ID: <199610250001.TAA06954@mail1.i1.net>

Greetings All,

I was attending an open house given by one of the 3 major 2 way radio shops in the St. Louis area today. I had worked for them as a tech some years back. My new firm wanted me to go over and have lunch (BBQ brats and chicken breasts etc etc.) (Free) and kibitz about.

While back in the shop area talking to one of the techs I saw a stack of ER under a shelf. Asked about them was told they belonged to one of the techs who was not in today. Mentioning the BA word brought out some response from a couple other guys in the shop One fella lifted a cardboard box marked "Dont Touch" to reveal a Collins 32V1 that had been nicely cleaned up. He also had an R388/ 51J3 hiding out in this hi tech shop. Another fella offered to show and sell me his really cleaned up Viking 1. It had no cabinet and the front panel had been repainted with gray hammertone. They had used DYMO labels for marking controls. Actually the TX looked awfully good. I told him I would think about it. He said make him a low offer, I said I would. He said it works fully. Ya never know where the boats will turn up.

No the 32V1 and R388 are not loose. Wish they were. I would have releived him of them. heheheh   73 de KS0F (still?????)

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: "Joseph W. Pinner" <kc5ijd@mail.net-connect.net>
Subject: BC-654 manual wanted
Message-ID: <199610242338.SAA19256@dns1.net-connect.net>

I have recently acquired a really nice BC-654 with PE-103 and cables.

I would like to secure an original manual to go along with the set.

I know that this is not an easy item to find, but never hurts to ask.

73

Joseph W Pinner
Lafayette, LA
KC5IJD
EMail: kc5ijd@net-connect.net

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: mknudsen@lucent.com
Subject: Re: Bristol splines- again!
Message-ID: <9610251732.AA04427@bock.ih.lucent.com>

As a point of departure for quality and length of Bristol pline wrenches, shouldn't we start with the tools originally supplied with the equipment? The four Bristols in the 51J3/R388's dust cover are pretty short, but they work fine. The R390A's wrench is longer, but more for comfort and convenience -- anything that will reach inside the big knobs will do.

I agree with Paul that for hi-torque applications, and getting into tight spots along the panel, shorter and simpler is better. Long tools with plastic handles are nice for alignment tweaking, and maybe needed to work on gears in the tuning mechanism (heaven forbid you should have to).
73, mike k aa9rg

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Joseph J. Curry" <71407.1774@CompuServe.COM>
Subject: RE: Cathode vs Grid Driven Amps
Message-ID: <961025225302_71407.1774_FHV50-1@CompuServe.COM>

I have been following the Larry vs Barry thread on the pros and cons of each. My personal favorite is a grid driven, heavily swamped input. With low resistance (a few hundred ohms or less), I haven't found a problem with tetrodes. Triodes are always a tricky matter. Other than freedom from neutralizing circuits, I like the idea that the input is broadbanded and resistive. You can drive it with anything and it makes bandswitching a plate-circuit-only operation. I have used this for Class C as well. In a contest between efficiency and simplicity, I'll take simplicity.

For those who want to try 807s/1625s in a cathode driven configuration, I would recommend the 837. It is a 12.6 volt tube that is essentially an 807 but the beamforming plates are not tied to the cathode and are brought out to a seperate pin (to be grounded). Many years ago, I ran four of them in GG service and they worked like a champ. For GG service, the differences to an 807 are miniscule. The tubes are relatively plentiful; 7 pin sockets are much harder to find, but still available.

73,

Joe
K3ICO
AMI #721
71407.1774@compuserve.com

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: "Barry L. Ornitz" <u856010@eastman.com>
Subject: Cobalt Drill Bits
Message-ID: <Pine.ULT.3.91.961024203434.26857H-100000@dua150.kpt.emn.com>

I really do not want to go against someone whose signature file says he works for a CNC machining company on what is or is not a cobalt drill bit. Richard Hager's comments, however, go against everything I have learned about tool alloys. They also disagree with our research machinists and with the research I did in our library after work.

John Hager wrote:

> "Cobalt" bits are the same as HSS (high speed steel) which I mentioned
> in my previous post.

Then why do manufacturers like Morse Cutting Tools, Regal Beloit (National Twist Drill), Acme Cleveland Twist Drill, Vermont American, and dozens more clearly distinguish cobalt bits from HSS and Titanium Nitride coated bits? They are plainly NOT the same. John essentially repeated what I said about TiN coatings:

> You would not 'choose' between Titanium Nitride (TiN) versus Cobalt/HSS.
> Cobalt steel is an alloy, whereas TiN is a hard and lubricative coating
> that is used on all base metals including cobalt/HSS. It tends to prevent
> pressure-welding of the metal chips on the flutes, and it increases
> cutting edge life significantly.

Titanium nitride coating also gives a surface hardness in excess of 80 Rockwell-C. This surface treatment significantly increases drill life, but once worn through they fare little better than regular HSS bits. Naturally, sharpening takes off the coating.

> Carbide bits are the only thing that will drill fully-hardened steel,
> although I think setscrews are only 'half-hard'.

Cobalt bits are specifically listed as being for use with "tougher, harder alloy steels of the stainless and manganese types; castings; forgings; chilled cast iron" (Morse) and "tough and abrasive materials, high temperature alloys, stainless and heat treated high strength steels" (National). Setscrews are typically hardened only on the conical tip in the larger sizes. I have seen both fully hardened and non-hardened setscrews in the small sizes like those use on knobs.

> All the plain cobalt/hss tools we buy at work are regular steel color.
> All the TiN coated tools we buy are gold colored, regardless of the
> underlying alloy. There is no reason a maker couldn't coat an entire
> cheap carbon steel bit with TiN. So don't go by length of coating, go by
> definite words like "cobalt high speed steel" or 'HSS' on the package.
> Also, the point angle doesn't signify anything about the tool's alloy.
> All alloys are available in all different point angles and types.

All of the cobalt bits I have ever seen have a slight gold color to the alloy, somewhat like a faint bronze color, not the bright gold color of Titanium Nitride. This is not a surface color either. If you should break one, the color goes all the way through.

All of the cobalt bits I have seen (except for the very tiny sizes) have a 135 degree split point to minimize work hardening of the materials they are drilling. Such a point is sometimes found on conventional HSS bits by special order but most common HSS bits have a conventional 118 degree point.

True cobalt bits can be run 25% faster than HSS because they can withstand much higher cutting temperatures. They are more rigid than HSS but not brittle like carbide bits (which are generally NOT suitable for home use). They should be used with higher point pressure than HSS too.

I know this discussion has been pretty far afield from Boatanchors, but like Bristol wrenches, it pays to use quality tools when working on valuable equipment. I agree with Richard about the cost of quality drill bits. They are not inexpensive. But most home improvement centers and hardware stores are now starting to carry the Titanium Nitride coated bits in addition to conventional high speed steel. If the prices locally are not out of line, however, the cobalt bits can be purchased for slightly less than the TiN coated ones. In my book, this makes them a better bargain.

I hope John Schwartzberg who is a true metallurgist and on this list will comment and clarify things. Until he does, I suggest Richard and I keep further discussion of this off the list. I have had just two courses on metallurgy, so I am sure John is far more qualified than I in this area. When I talked to the manager of our research shop this afternoon, he told me that he loved to go to machine tool shows and ask about new equipment. He said salesmen always begin by asking "what are you machining?" and his standard reply is "everything". We commonly work with a number of corrosion resistant alloys in the stellite family which most machine shops thankfully never see. Likewise how many shops do tantalum, gold, molybdenum, sapphire, titanium and silicon carbide. It does help that we now have CNC, EDM and laser cutting equipment. [But they won't let me use the equipment to make replacement knobs! Back in the "good ol' days" it was not unusual to see a 316L stainless trailer hitch go home in a lunchbox.]

73, Barry L. Ornitz WA4VZQ ornitz@eastman.com

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: stever@cybercomm.net (Stephan Rashkin)
Subject: DDS2A Info
Message-ID: <199610242108.RAA03614@raven.cybercomm.net>

I saw a lot of info about the DDS2A on WA3KEY's Web site..it is located at:

http://www.users.fast.net/~wa3key/dds2a.html

Other great info there also..check it out..

73,
Steve, WA2NHZ

 ****

Steve Rashkin, WA2NHZ
Howell, New Jersey 07731

E-mail: stever@raven.cybercom.com

****

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Cal Eustaquio N6KYR <ceustaqu@dot.w6bhz.calpoly.edu>
Subject: Re: DDS2A Info
Message-ID: <Pine.SUN.3.91.961025105041.27337B-100000@dot.w6bhz.calpoly.edu>

In all actuality, one probably could buy a cheaper version of the DDS VFO found on the pages of QST, May 1995 for about 80 bucks. Cal.

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: mknudsen@lucent.com
Subject: Re: DDS2A Info
Message-ID: <9610251826.AA04459@bock.ih.lucent.com>

No kiddin'! I looked it up in a Web site, found that it's a nice digital VFO for the S-line, figured "what a neat way to upgrade my KWM-2 to KWM-2B without going thru -A", got hte order form, and found they wanted over $600 for it! Geeez, is that the Meatball or Winged emblem version?

I seem to recall something similar and much cheaper advertised in The COllins Journal, but maybe I'm just thinking of a numerical readout.

BTW, I cuda had a KWM-2A and complete set of xtals for under $600 recently -- silly me, didn't bite. You can still get a good KWM-2 and PS for the price of the DDS2A. 73, mike k aa9rg

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: "Barry L. Ornitz" <u856010@eastman.com>
Subject: Efficiency, stage gain, and distortion in "Grounded Grid"
Message-ID: <Pine.ULT.3.91.961025120527.28394C-100000@dua150.kpt.emn.com>

Larry Kayser wrote:

> The 4-65A, 4-125A, 4-250, 4-400, and 4-1000 have all been used in GG service over the years. They do not work very well in this form of service. This is not only my opinion but is confirmed by the demonstrated efficiency and 3rd order distortion levels for these tubes in GG service. The better solution is to use them in conventional Grid Driven service. The use of Swamped Grid operation for these tubes will almost certainly keep them stable and provide excellent linearity and power output.

Actually all of the above tubes work quite well in cathode driven service with the exception of the 4-65A. The reason the 4-65A is not nearly as suitable is because the ratio of control grid to screen grid current is too high - even with DC bias on the grids. The 4-125, 4-250, 4-400, and 4-1000 generally work with both the control and screen grids grounded for DC as well as RF, although the 4-125 is a little marginal in plate dissipation.

Bill Ross replied to this referencing Bill Orr from Eimac/Varian:

> The latest figures listed by Bill Orr W6SAI (Radio Handbook, Twenty-Third Edition) indicate that intermodulation distortion figures improve by 5 to 10 db for triode connected tetrodes in cathode driven grounded grid service over that of grid driven class-AB1 service. He states that, while figures vary from tube type to tube type, all so-called "grounded-grid" triodes and triode connected tetrodes show some degree of improvement in distortion figure when cathode driven as opposed to grid-driven service.

Larry replied to this [sorry for all the quoting but the connection between these is needed for my later comments to make sense]:

> First I have great respect for Bill Orr and his work over many years. I think, and I have no access to your reference work, that the GG you describe may be with GG for RF and full DC on G1, G2 to achieve the kinds of performance you are describing. I neglected to include this condition, my error. The DC efficiency is still much worse as is the RF gain per stage.

Actually the benefits of cathode driven operation are independent of whether the grids have DC bias or not (as long as the tube is operated in the same mode, i.e. A, AB1, AB2, B, or C). The distortion improvement is a natural result of the inherent negative feedback of placing the driver in series with the final amplifier. This is also the reason for much lower stage gain in cathode driven service. You must state your definition of efficiency, Larry, because if you define it as RF power out divided by DC power in, the efficiency of cathode driven operation is higher than with grid driven operation. Because the driver is in series, significant "feedthrough" power from the driver shows up in the final output. This is because the drive voltage adds to the plate voltage during the portion of the cycle when the tube is turned on.

If you have excess drive power, you have your choice of dissipating it in a resistive load as Larry describes, or having it add some to the output power in cathode driven service as Bill describes. With the grid grounded for RF in the cathode driven case, it acts as a shield between the plate (output) and the cathode (input). This greatly reduces the need for neutralization but at VHF and UHF frequencies it does not eliminate it. Likewise heavily swamping the grid with a low value of resistance in grid driven service reduces but again does not completely eliminate the need for neutralization.

Certain tubes, like the 4X150 family (4CX150, 4CX250, 4CX300, 4CX350, 8122, 4CX1000, 4CX1500, etc.) have a rather delicate control grid made of many turns of extremely fine wire. This gives the tubes very high power sensitivity in grid driven service but makes them generally unsuitable in cathode driven service. The control grid basically "hogs" all the combined grid current and quickly burns out. These tubes can often be used in what is termed super-cathode driven service. In this case, the control grid is tied to the cathode and the screen grid is used as the "grounded" grid. I have seen little published data on this mode of operation, however. All of the above series of tubes MUST have the proper DC biases on the grids to work.

Finally Larry mentioned a modification to the 1625 to separate the beam forming plates from the cathode. This only worked in certain versions of the 1625 because some manufacturers made this interconnection internal to the tube rather than at the base. I think this is described in the 1957 ARRL handbook.

As Hank van Cleef mentioned a few days ago, the term "grounded-grid" should have never been introduced into the amateur vocabulary. Cathode driven is the correct term, and it definitely implies that grid bias considerations are an independent issue.

73, Barry L. Ornitz WA4VZQ ornitz@eastman.com

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: lkayser@rideau.net (Larry Kayser)
Subject: Re: Efficiency, stage gain, and distortion in "Grounded Grid"
Message-ID: <199610252041.QAA06963@mail.peterboro.net>

Greetings:

I have read Barry's piece and I see that my "They do not work very well in this form of service." is not really very far from "Actually all of the above tubes work quite well in cathode driven service with the exception of the 4-65A." My unacceptable performance is easily within Barry's "quite well" level of acceptable performance.

>Actually the benefits of cathode driven operation are independent of
>whether the grids have DC bias or not (as long as the tube is operated in
>the same mode, i.e. A, AB1, AB2, B, or C).

With the tubes given, it is my experience that is is not possible to run them in DC grounded grid operation in Class A, AB1, or AB2, they draw appreciable DC Grid current with a tiny fraction of a Watt of drive.

You must state your
>definition of efficiency, Larry, because if you define it as RF power out
>divided by DC power in, the efficiency of cathode driven operation is
>higher than with grid driven operation.

A 4-1000 in GG requires 130W of RF to drive it to 950 to 1100 W RF output with between 3000 to 3700 VDC on the plates. This is with distortion being kept to a negligible level with linear detectors on the input and output and fed to X and Y of a scope. If you push the DC to 4500 or > you can get the output up to 1300 W of RF but the G1 will get fried very quickly. The RF output includes some portion of the Drive which makes the stage gain down to around 8 db, hardly something to write home about. If you want to increase the distortion appreciably, in the order of 5% to 10% or more, which is distressingly large number of amateurs do, then you can get 1400 W RF output or a bit more in these conditions.

>If you have excess drive power, you have your choice of dissipating it in
>a resistive load as Larry describes, or having it add some to the output
>power in cathode driven service as Bill describes.

Swamped Grid does not mean only the use of 50 ohm resistors in the Grid circuit. I have used as little as 2000 ohms to ground to give stable and totally repeatable performance with the 4-1000. The drive level was 4 watts RF for 1500W output or more, class AB1, at 4400V DC, at HF.

Likewise heavily swamping the grid with a low value of
>resistance in grid driven service reduces but again does not completely
>eliminate the need for neutralization.

My statement was that if you swamp the grid you can get the amplifier to go stable. I have done this many times, load G1 down until I can get to work on only one problem at a time, if you have problems with parasitics. Once a parasitic is tamed, then raise G1 until you get to the next exciting moment. If the isolation of the amplifiers output to input is less than the gain you have a real neat TPTG transmitter and you can use the exciter for something else. I keep enough swamping to avoid the potential for that condition.

>Finally Larry mentioned a modification to the 1625 to separate the beam
>forming plates from the cathode. This only worked in certain versions of
>the 1625 because some manufacturers made this interconnection internal to
>the tube rather than at the base. I think this is described in the 1957
>ARRL handbook.

I have modified probably several hundred of the 1625's in the mid 1950's and I never saw one with the connection made internally in the tube. I did read of this anomaly in the 1625 back then but I never saw one built that way, doesn't mean there are none, just means I never saw any of them. We got our 1625's mostly from surplus stores in Minneapolis MN and I think in Fargo, North Dakota. When we found a large supply of 837's locally we dumped the 1625's in any case.

I have just found a reference to this in one of my 1950 era notebooks. There were even some, repeate SOME 807's made with the two wire external connections, but not many in my experience. I had looked at this after a GG pair of 807's was described in QST.

I still do not like the DC GG operation of Eimac 4-n series tubes.

Larry
va3lk / wa3zia

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: "Barry L. Ornitz" <u856010@eastman.com>
Subject: Filling Holes
Message-ID: <Pine.ULT.3.91.961024174827.26857D-100000@dua150.kpt.emn.com>

Spencer Petri, WA5JCI, Eric Sluder, KB9BGS, and Steve Berg, WA9JML, discussed filling extra holes in panels. In the past I have had excellent success with the epoxy materials by Devcon and LPS. These companies make aluminum, copper, steel, bronze, and stainless filled epoxies for metal casting repairs. The finished patch is hard and can even be machined after it has properly cured.

For small holes, these epoxy putties can be used with little surface preparation other than a thorough cleaning. For large holes, I generally bevel the edges slightly to hold the patch in better. For large holes, like where a meter might have been, some window screen may be used to reinforce the patch. A thick piece of polyethylene, like a piece cut from the snap-on lid of a margarine tub, makes a good non-stick backup plate for supporting large patches until they have dried. Remember these epoxy putties do shrink very slightly upon curing so it is best to make the patch slightly high and sand it down level after it cures.

These metal filled epoxies can be drilled and tapped much like the original metal. The only problem I have had was when a large drill hole went partly through a patch I made (most of the hole was in virgin metal but the edge of the hole intersected the patch). I found if I was careful, I could even do this fairly well without chipping the epoxy.

Unfortunately most of these metal filled epoxies are rather expensive. They are also generally not electrically conductive so if you patch a large area, you have lost the electrical shielding property of the metal. In many cases, aluminum or copper foil can be placed behind the patch if this shielding is a necessary requirement.

73, Barry L. Ornitz WA4VZQ ornitz@eastman.com

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: Eugene Rippen <soundval@foothill.net>
Subject: FS HALLICRAFTERS
Message-ID: <3270244B.741@foothill.net>

The following HALLICRAFTERS gear is for sale. Untested unless stated otherwise.
The Descriptions ("F", "G" etc) relate to outward appearance only.
Unless stated otherwise they appear to be complete and unmodified.

HALLICRAFTERS

S120	Does not play.	F-G	$30.00
S120	Plays but hums	G	$45.00
S20R	Needs filter capacitors	G	$70.00
SX16	Looks complete	F-G	$85.00

Add shipping

```
From boatanchors@theporch.com  Fri Oct 25 20:11:20 1996
From: Allen Tucholski <allent@en.com>
Subject: FS Misc
Message-ID: <1.5.4.16.19961025201908.348f8bc8@en.com>

:
Posted for a felow listmember who is having trouble with his posts.
Please reply to  gcr2@po.cwru.edu

>Shack Cleaning Sale: All prices plus shipping or pickup NE Ohio
>
>Stewart Warner R392 with meters, manual copy and speaker /PS   $250
>Heath SB220 Kw linear amp Like New with manuals                        $475
>Hallicrafters HT32  good condition with manual                             $175
>Swan 250 with 117 Xc PS  good condition with manual                    $225
>Eico 360 sweep generator GC with manual
>$35
>Heath variable HV power supply. #PS-3
>$35
>Eico Signal tracer #147A with manual
>$35
>General Radio Unit Oscilator (RF generator) & 1203 PS
>Lab Quality   .5 to 50 mhz    model 1211
>$60
>Lab Quality    50 to 250 mhz    model  1206?
>$60
>Gen Radio Unit amplifier 2 6W6gt 600 ohm out                               $30
>Ameco TX62, parts unit, has both compactrons                               $25
>
>Reply to gcr2@po.cwru.edu
>
>Thanks George
>
>
>
>
>
>
NASA Lewis Reasearch Center
Cleveland, Ohio
```

```
From boatanchors@theporch.com  Fri Oct 25 07:04:56 1996
From: Tom.Daley@530.gigo.com (Tom Daley)
Subject: fs: 3 ba items
Message-ID: <2eb_9610242120@gigo.com>


hello ba people i have three items to sell or trade. i am looking
for gonsets ! all below plus shipping

1. heath pawnee hw-20 2 meter am/cw transceiver, good condition
with original microphone and power cord. missing one small knob
and is untested. has seperate rx and tx vfo's. front panel great !
dusty but complete $65

2. galaxy five hf ssb transceiver in good condition with dc 12v
power supply. front panel/knobs/meter/dial looks good. complete
but untested. with manual copy. with 2nd used pair 6hf5 tubes.
no mic $95

3. glegg zeus 6 and 2 meter am transmitter in good condition.
uses 7034 (4x150a) final ! eddystone dial ! front panel and
knobs/meter/dial looks good. no power supply/modulator unit.
with manual copy. untested $50

dont be shy with offers or trades !! located in sacramento 73 tom
--
: Fidonet:  Tom Daley 1:203/530  .. speaking for only myself.
: Internet: Tom.Daley@530.gigo.com
```

```
From boatanchors@theporch.com  Fri Oct 25 16:09:10 1996
From: dvorkin@pcs.mot.com (Vlad Dvorkin)
Subject: FS: Heathkit Q-multiplier
Message-ID: <199610251707.NAA14897@iron65.pcs.mot.com>

For sale or trade:

Heathkit Q-multiplier (455 khz).
Model GD-125.
Very good condition.
Looking for 1AD4 submin. tubes for trade.
$30.00 if no trades.

Regards,
Vlad
KB9OLM
```

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: wbird@dns1.ala.net
Subject: Fw: Info Help Wanted
Message-ID: <M.102596.103119.47@ala.net>

I have an SP600-JX on the way from one source and a small Hammarlund speaker on the way from another source. I have been told that they are not compatible. Is there anything I can do to make them compatible when they arrive short of ripping the speaker out of the case and replacing it with another? Thanks
Willis T. Bird (W4WUL)

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: "Grant Youngman" <nq5t@gte.net>
Subject: Re: Fw: Info Help Wanted
Message-ID: <199610251608.LAA27648@mail1.gte.net>

> I have an SP600-JX on the way from one source and a small Hammarlund speaker on
> the way from another source. I have been told that they are not compatible.

The SP600 has a 600 ohm output for speaker connection. The Hammarlund speaker is probably rated at 4 ohms.

The fix is easy. Rat Shack carries a small 1000 ohm to 8 ohm transformer for a couple of bucks. It will work just fine in this application. Its rated at 1 watt, which is plenty unless you want to put the radio on the 2nd floor and do all your listening on the 1st :-). Connect the primary side to the SP600 and the secondary side to the speaker (you can clip the primary center tap -- black as I recall -- since you won't need it). I use one of these for both my SP600 and R390A. Works great, is small (less than 1 cu. in.), has surprisingly good frequency response, and is CHEAP!

You can also use a 70 or 25 Volt PA-type matching transformer, or anything else that will give you a 500-1000 ohm primary to 4-8 ohm secondary. Even a 12 volt filament transformer (12 volt side to the speaker, 117 volt side to the radio) will work in a pinch.

Regards ...

Grant/NQ5T
Grant Youngman -- NQ5T
nq5t@gte.net
HTTP://home1.gte.net/nq5t/index.htm
Double Oak, TX (near Dallas)

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: wbird@dns1.ala.net
Subject: Re: Fw: Info Help Wanted
Message-ID: <M.102596.115044.37@ala.net>

----------------------------Reply Separator---------------------------------

> I have an SP600-JX on the way from one source and a small Hammarlund speaker on
> the way from another source. I have been told that they are not compatible.

The SP600 has a 600 ohm output for speaker connection. The Hammarlund speaker is probably rated at 4 ohms.

The fix is easy. Rat Shack carries a small 1000 ohm to 8 ohm transformer for a couple of bucks. It will work just fine in this application. Its rated at 1 watt, which is plenty unless you want to put the radio on the 2nd floor and do all your listening on the 1st :-). Connect the primary side to the SP600 and the secondary side to the speaker (you can clip the primary center tap -- black as I recall -- since you won't need it). I use one of these for both my SP600 and R390A. Works great, is small (less than 1 cu. in.), has surprisingly good frequency response, and is CHEAP!

You can also use a 70 or 25 Volt PA-type matching transformer, or anything else that will give you a 500-1000 ohm primary to 4-8 ohm secondary. Even a 12 volt filament transformer (12 volt side to the speaker, 117 volt side to the radio) will work in a pinch.

Regards ...

Grant/NQ5T
Grant Youngman -- NQ5T
nq5t@gte.net
HTTP://home1.gte.net/nq5t/index.htm
Double Oak, TX (near Dallas)

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: lkayser@rideau.net (Larry Kayser)
Subject: Grounded Grid Operation of 6l6, 807, 1625 and others
Message-ID: <199610250108.VAA26914@mail.peterboro.net>

Greetings:

The operation of unmodified 6L6, 807 and 1625's in grounded grid is not advised. They do not work properly if you just drive the cathode. This is because the cathode is tied to the beam forming plates.

The 1625 is a special case. You can use a Dremmel tool to open the side of the base adjacent to the cathode pin and you will find two wires twisted together into the cathode pin. Pull them out, isolate the cathode and connect the beam forming plate wire to the adjacent screen or control grid pin, I can not remember which is which at the moment. These tubes will then work excellently.

An EVEN BETTER idea is to go find some 837's. These little dandies have the beam forming plate wire on a separate pin and you can just wire them up and away you go in GG

6AG7's will work the same way, just wire them up and use them.

The 4-65A, 4-125A, 4-250, 4-400, and 4-1000 have all been used in GG service over the years. They do not work very well in this form of service. This is not only my opinion but is confirmed by the demonstrated efficiency and 3rd order distortion levels for these tubes in GG service. The better solution is to use them in conventional Grid Driven service. The use of Swamped Grid operation for these tubes will almost certainly keep them stable and provide excellent linearity and power output.

Larry
va3lk / wa3zia

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: "William B. Ross" <billross@txdirect.net>
Subject: Re: Grounded Grid Operation of 6l6, 807, 1625 and others
Message-ID: <32703ECA.62C8@txdirect.net>

Larry,

The latest figures listed by Bill Orr W6SAI (Radio Handbook, Twenty-Third Edition) indicate that intermodulation distortion figures improve by 5 to 10 db for triod connected tetrodes in cathode driven grounded grid service over that of grid driven class-AB1 service. He states that, while figures vary from tube type to tube type, all so-called "grounded-grid" triodes and triode connected tetrodes show some degree of improvement in distortion figure when cathode driven as opposed to grid-driven service.

Bill K5LLK

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: "Richard A. George" <wa6jox@rain.org>
Subject: Re: Grounded Grid Operation of 6l6, 807, 1625 and others
Message-ID: <Pine.SUN.3.95.961025123314.29328A-100000@coyote.rain.org>

Note: not all 1625 are able to be modified to lift the suppressor grid from the cathode, only certain brands. after 30 years i forget wich ones.

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: Bill Meara <74537.1100@CompuServe.COM>
Subject: Help with Benton Harbor Lunchboxes
Message-ID: <961025001334_74537.1100_EHH75-1@CompuServe.COM>

Anchorologists:

The leaves are falling, the days are getting shorter... I feel the urge to bring an old Boatanchor back to life!
I don't have very large and sturdy work bench yet, so I think my SP-600 will have to wait.   Looking around the shack for a suitable candidate, I spotted them! Two Benton Harbor Lunch boxes: A Heath Twoer and a Sixer - both in reasonably good shape. These radios will be my next project.

I'll obviously have to replace a few electrolytics and perhaps a tube or two. Right now I need manuals.
Does anyone have manuals for these rigs? I'd happily help out with copying and mailing costs. Please let me know!

Also, I'm in need of a microphone. If anyone has a functioning original, that would be very cool (pardon the computer lingo).   How about replacement mikes for these rigs? Anything suitable in the local Radio Shack?

Finally, I ask the list for info on what the aspiring BA VHFer in the Washington D.C. area is likely to find on 2 meter and 6 meter AM.

Thanks in advance.

73 de Bill   N2CQR/4

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Matt Jodziewicz <mattj@orausa.com>
Subject: HRO Product Detectors

Message-ID: <01BBC251.5568ED60@mattj.orausa.com>

Hi Ed,

I am currently playing with adding a product detector to my HRO60 and found that there are some interesting articles in the latest ER as well as the April 1966 QST. Maybe these will be of help.

Also if anybody is trying to make a Select-O-Jet (my next project) there is a good article in the 1957 ARRL Handbook on page 132.

Matt WB2VZS

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: cmthomp1@facstaff.wisc.edu (Clark M. Thompson)
Subject: Re: HRO Product Detectors
Message-ID: <199610251826.NAA78635@audumla.students.wisc.edu>

Hi all,

There's an article on p.18 of the October '96 issue of ER on a product detector for the HRO-60. It uses a 6SA7 plugged directly into the accessory socket.

Sounds interesting! Maybe I'll try it on my NC-183D.

73,

Clark, KD9QI

cmthomp1@facstaff.wisc.edu

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: mknudsen@lucent.com
Subject: Re: HRO Product Detectors
Message-ID: <9610251933.AA04562@bock.ih.lucent.com>

Probably have to add a couple wires (BFO injection, etc) to the socket.

BTW, is one of the advantages of the NC-183 over the 173 the accessory sockets a la HRO-50/60? I knew the 183 added an extra RF stage and P-P audio output, but didn't know about the sockets. Does it provide for a calibrator too?

Also BTW, I got the full year 1947 QSTs, with lots of ads for NC-173
and NC-57 ($89.50 at every dealer), and a full account of the Kon-Tiki
Expidition with the NC-173 and two custom National TXs.

Also a two-opage ad for the postwar Meissner SIgnal SHifter with a testimonial
letter from the Galveston harbor disaster. The articles are pretty good
too :-) 73, mike k aa9rg

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: cmthomp1@facstaff.wisc.edu (Clark M. Thompson)
Subject: Re: HRO Product Detectors
Message-ID: <199610252021.PAA12782@audumla.students.wisc.edu>

Probably have to add a couple wires (BFO injection, etc) to the socket.

BTW, is one of the advantages of the NC-183 over the 173 the accessory
sockets a la HRO-50/60? I knew the 183 added an extra RF stage and P-P
audio output, but didn't know about the sockets. Does it provide
for a calibrator too?

Also BTW, I got the full year 1947 QSTs, with lots of ads for NC-173
and NC-57 ($89.50 at every dealer), and a full account of the Kon-Tiki
Expidition with the NC-173 and two custom National TXs.

Also a two-opage ad for the postwar Meissner SIgnal SHifter with a testimonial
letter from the Galveston harbor disaster. The articles are pretty good
too :-) 73, mike k aa9rg

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: wbird@dns1.ala.net
Subject: Info Help Wanted
Message-ID: <M.102596.103116.83@ala.net>

I have an SP600-JX on the way from one source and a small Hammarlund speaker on
the way from another source. I have been told that they are not compatible.
Is there anything I can do to make them compatible when they arrive short of
ripping the speaker out of the case and replacing it with another? Thanks
Willis T. Bird (W4WUL)

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: provero@connix.com
Subject: Re: Info Help Wanted
Message-ID: <199610252102.RAA08373@comet.connix.com>

Chances are the only "incompatibility" is impedance.

Just use a 600:8 ohm transformer or one of the 8-10
tap universal audio impedance transformer.

I don't have any speakers of matching brand names
in my 8 receiver shack -- but all receivers work on
all speakers.

```
P.J. "Josh" Rovero      home:   provero@connix.com
Meteorologist          radio:   KK1D
Oceanographer           work:   rovero@sonalysts.com
Curmudgeon-at-Large      web:   http://www.sonalysts.com/
```

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: "F r6fqHo!ht" <75121.100@CompuServe.COM>
Subject: Klystron
Message-ID: <961025090143_75121.100_IHV33-1@CompuServe.COM>

Since Klystron were brought up on the list, Does anyone have a 2K22??   I have a
2K25 but have not been able to locate the 22 version. It is for a BA microwave
relay transceiver.   Yes, it is all tubes.   Once I get it out of storage, I wll
copy the name palte data to the list.

Regards from Hawaii,
Raymond J. Cote

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: don merz <71333.144@CompuServe.COM>
Subject: Lighting Black Wrinkle
Message-ID: <961025141855_71333.144_DHB56-1@CompuServe.COM>

My apologies to those of you who mayhave tried to reach me and didn't get
through this past week. I was unexpectedly called out of town on business
and forgot to NOACK the list.

Just before I left, I finished a project that has been on the queue in my shack
for some time--new lighting. Like many of us, I am banished to the basement
and the original lighting was neanderthal at best--bare bulbs and
fluorescent fixtures. I ripped it all out and replaced it with recessed
incandescent fixtures positioned so that they light the radios and don't

shine either straight down or in your eyes. This has really changed the look of the shack and been well worthwhile. You may want to experiment with some different lighting in your shack.

73, Don

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: jproc@bellglobal.com
Subject: Magnetron
Message-ID: <Chameleon.4.01.2.961024231254.jproc@>

Dear BA'ers,

Did someone on the list advertise a type 725A magnetron? I need a spare for the ships Sperry Mk2 surface search radar. Seems that I accidently erased that magnetron message.

Regards,

Jerry Proc VE3FAB
E-mail: jproc@bellglobal.com
HMCS Haida Naval Museum
Toronto, Ontario
'Looking for a 'AN/SRC-501'

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Don Flenner <w3ych@mindspring.com>
Subject: Manual Wanted
Message-ID: <1.5.4.16.19961025152347.21cfdc6c@pop.atl.mindspring.com>

Hi Gang,

I recently acquired a Heath/Schlumberger frequency counter to use with the vintage rigs. The model number is SM 4100. I can not find it listed in any of the vintage manual catalogs that I have. Does anyone have a manual that I could get a copy of. Would be happy to pay postage and copy charges.

Thanks in advance.

73, de Don W3YCH
Kennesaw, Georgia

e-mail - w3ych@mindspring.com

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: k7yha@juno.com (Richard H. Arland)
Subject: Manuals needed
Message-ID: <19961025.023817.4407.3.k7yha@juno.com>

Gang:

Need manuals for the following gear:

Knightkit TR-106 6 Mtr AM Xcvr
Knightkit TR-108 2 Mtr AM Xcvr

Heathkit SB-610 Monitor scope

Will pay repo costs and mailing.

73 es tnx. rich K7YHA

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Stanley Wilson <microres@crl.com>
Subject: Model 14 TTY Manuals available
Message-ID: <Pine.SUN.3.91.961025083916.18383A-100000@crl7.crl.com>

I am still cleaning my shack and find I have a nice set of Teletype Corp manuals for the Model 14.

Bulletin Nr. 147	Adjustments of single magnet reperforator
Bulletin 102B	Typing Reperforator
Bulletin 141B	Adjustment Model 14 & 20 Transmitter distributor
Bulletin 162	Single magnet reperforator Model 14 & 20

$5 for the set shipped. I think I can ship them for that amount via smail.
de stan ak0b
microres@crl.com

I no longer hv any 14 equipment, just model 28's.

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Ed Kleckner <ekleck@kendaco.telebyte.net>
Subject: Mods for HRO-50T1?

Message-ID: <Pine.LNX.3.91.961025074109.2658D-100000@kendaco.telebyte.com>

Greetings:

I've been browsing some old QSTs and came across an article by Murray Crosby, W2CSY entitled Reception with Product Detectors in the May 1956 issue. He describes a triple triode product detector (on which he was apparently issued a patent in 1949). I was thinking of building one up and installing it in the NBFM socket of my HRO-50T1, but before I get all charged up, I thought I would see if anyone in the group had any experience with retrofitting a product detector to the HROs. My primary interest is CW operation (not SSB). Did it make much of a difference? Did you also change and/or add any AVC circuitry? I also noticed in the October 1957 issue of QST there is an article by George Luick, W0BFL on "Improved A.V.C. for Side Band and CW that describes a hang AGC circuit. Has anyone tried that circuit or have any memories of working with it?

I still find myself amazed at the elegant simplicity of the HRO-50 design. The circuits are straightforward, the components high-quality, and the mechanical layout intelligent. Last night I was listening to a small pileup on the bottom of 40m with V26E and the beat note was rock solid for over 30 minutes. The only temperature compensation used in the HFO is a small NPO cap mounted near the HFO tube, the rest is good design and components.

Thanks for any comments on the product detector and/or avc in advance...

```
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~ Ed Kleckner, N7YQR          ~
~ ekleck@kendaco.telebyte.net ~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: mknudsen@lucent.com
Subject: Re: Mods for HRO-50T1?
Message-ID: <9610251702.AA04386@bock.ih.lucent.com>

Well, the HRO-60 that I paid too much for came with a rather nicely built product detector in the NBFM socket. The 50 and 60 are unique rx in that both come ready made to have an SSB/CW detector plugged in. My previous owner even Dymo'd "SSB" over the "NBFM" on the knob skirt!

I haven't taken the unit apart, but it works great, in fact it's about the only part of this HRO-60 that works well yet. It has one xtal, about 453 KC, and I *think* it uses a 6BE6 pentagrid mixer.

I personally think pentagrids or 4-diode rings are the best ways to build a product detector, and that nonlinear schemes involving a triode mixer are too susceptible to envelope AM detection (shame on Collin sfor using that in the 75A4, but nobody gets it all right the first time).

I agree that Nationals are good conservative designs, no funny tricks, fine parts (except for Rs and Cs later on).

Anyway, if you're really interested, I could open up the product det and see what's inside, trace the circuit, etc., but it would take a while. BTW, I suspect the 453 KC xtal was for USB, and you had to lift hte lid and swap in a 457 KC rock for LSB -- sort of follows the National plug-in tradition, eh? 73, mike k aa9rg

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: jproc@bellglobal.com
Subject: RE: More on Selenium Toxicity
Message-ID: <Chameleon.4.01.2.961024214403.jproc@>

I thought that I would add my 2 cents on this thread.

A special scalp treatment shampoo for dandruff which I used many years ago contained selenium. The bottle was liberally laced with warnings about toxicity and had a big logo of the skull and cross bones. The most important thing was to keep it away from the eyes and avoid ingesting any.

It really is nasty stuff if you are not careful with it. Needless to say, the idea of applying a selenium based compound to one's anatomy was most revolting and never finised using up the small bottle.

Regards,

Jerry Proc VE3FAB
E-mail: jproc@bellglobal.com
HMCS Haida Naval Museum
Toronto, Ontario
'Looking for a 'AN/SRC-501'

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: Richard Hager <rhager@millcomm.com>
Subject: MSC TOOLS PHONE#
Message-ID: <32704B40.3518@millcomm.com>

John Kolb wrote:
>
> On Thu, 24 Oct 1996, Richard Hager wrote:
> > d) Finally, rather than address Barry's post point by point, I will simply
> > repeat my earlier recommendation: Get an MSC catalog or similar, and buy your
> > tools there, not at the hardware store.
> >

> Add me to the list of those who've never regretted any money spent on
> "good" tools, but have mis-spent money on poor ones. What's the phone number
> for MSC - I don't run in any circles where I see ads for tool companies.
> John--

Sorry,
Put it in the original post but forgot in the second one. That's the problem
with doing email at midnight. MSC # is: 800-645-7270. My only connection with
them
is that they willingly accept my credit card. However, we've been through a few
others at the office, like Enco, and have found msc to be pretty flawless as far
as
vendors go...
--

Richard Hager

+ Ah-ha! Design Group, Inc. -
+ Precision CNC Technology, since 1991 -
+ 612-641-1797, Fax: 612-641-8681 -
+ "I just like to build stuff" So... -
+ for CNC info, don't email me, call -
+ or email Ah-ha! directly. Thanks! -
+ www.gdic.com/ahha email: ahha@gdic.com -

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: radionostalgia@serv2.fwi.com (Jack C. Shutt)
Subject: NC-156/RBH receiver
Message-ID: <199610251929.OAA14022@serv2.fwi.com>

Hello Anchorites:

Does anyone have a schematic and/or manual for an NC-156 receiver?
This receiver is also known as the RBH and is a NAVY version of a
National NC-100A with 1500 kHz IF. I need a schematic and dial stringing
(band indicator) info. I would be happy to reimburse for a copy and
mailing. (NC-100A info is not sufficient)

Thanks and 73,

Jack C. Shutt, N9GT
AMI#215
****
****
Jack C. Shutt, N9GT
radionostalgia@mail.fwi.com
(219)493-3901

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: jproc@bellglobal.com
Subject: RE: Need Admiralty "5G" set info
Message-ID: <Chameleon.4.01.2.961024232031.jproc@>

Ray,

Try this Web site:

http://chide.bournemouth.ac.uk

This is a virtual museum for British military gear which has been developed by the University of Bournemouth in the UK. They may have something on that set. If not perhaps they may have a contact name somewhere in the Web page.

Regards,

Jerry Proc VE3FAB
E-mail: jproc@bellglobal.com
HMCS Haida Naval Museum
Toronto, Ontario
'Looking for a 'AN/SRC-501'

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: wi2p@VNET.IBM.COM
Subject: Needed Collins Winged Emblem (Just the emblem!)
Message-ID: <199610251855.NAA19169@uro.theporch.com>

I just received my "new" 516F-2 PS, and while the PS itself is in good shape, it's missing the winged emblem. Anyone have one?

73, Ray WI2P   wi2p@vnet.ibm.com

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "JOSE V.GAVILA (EB5AGV)" <eb5agv@ctv.es>
Subject: New in the list & S-line questions
Message-ID: <199610252320.AAA18891@sandra.ctv.es>

Hello all boatanchor people!

As title says, I'm new in the list (but I've been looking the traffic by means of AB4EL service for some months, so I have an idea of what happens here and I have got very useful information from here!).

Well, apart of salutations, I have some questions about an S-line; I've just received (24/10) an S-line composed of 75S-3B, 32S-3, 312B-4 and 516F-2. One problem is that in Spain we have 220VAC instead of 115VAC. Although I had been told that the 75S-3 was only designed to work with 115VAC, I found that it had a parallel winding in the primary transformer, so I changed it from parallel to series, and now it works fine at 220VAC. On the other hand, in all the documentation I have about the 516F-2, it is said that it has a double primary winding at the transformer... WRONG!. Mine has a different transformer (reference 662-0434-00 instead of 662-0249-010) so I'm unable to change it to 220VAC and need an external transformer. I have no idea of whay it is a different model than in the booklet... Any help appreciated!.

Another trouble I have is with the VFO in the 75S-3. Basically, it is a mechanical problem; I move the dial up or down about 1 KHz and sometimes frequency remains unchanged, changing abruptly a moment later. So tuning is very difficult. It is possible to open the VFO to check inside?. It appears as if something is not as tight as it should be, but externally all works fine; the dial moves smoothly and gears are in good shape, so I'm sure the problem is inside the VFO cage. Any idea to overcome this problem?.

And the third one is with the 32S-3; in USB, when I press the PTT (with or without mic), I got about 5 watts of carrier (I think it is the carrier; by the way it is an unmodulated signal). But in LSB it works fine. Should I try the carrier supression adjustment?. I'm not sure because it only happens with USB... Help, please!.

Well, as this is my first posting, I don't want to bore you too much :-)

Sorry if my english is not very nice to read.

Thanks!

----

73 JOSE V. GAVILA (EB5AGV / EC5AAU)
Valencia - SPAIN

http : //www.geocities.com/SiliconValley/6992
e-mail: eb5agv@ctv.es

```
*****************************************
*  PLEASE, note my NEW e-mail address:  *
*     eb5agv@ctv.es                     *
*   or                                  *
*     eb5agv@amsat.org                  *
*****************************************
```

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: Richard Hager <rhager@millcomm.com>
Subject: Re: noise cancelling
Message-ID: <3271540E.75C7@millcomm.com>

Wayne Cronin wrote:

> I'll bet you can order the JPS manual (with schematic?) alone.
> They do have a web page.
>
> Their design is based on "old" technology. I don't remember where,
> but I did see a reference to the info on the original design. Maybe
> it was in the QST (or Monitoring Times, etc.) review of the JPS
> product. (We need somebody who has all those QST issues on
> CDROM on our list!) Also, I think I remember a reference to a
> Collins product that did the same thing (S-Line vintage).

Thanks Wayne. I am quite motivated to attack this damn powerline noise problem. If anyone with good info on loops, noise cancelling, or other related devices would like to mail me copies of articles, etc.., I will invest the time to build, test, and redesign if neccesary, and pass the info back along this route.

The noise at my location is getting worse, not better. So if I don't figure something out soon, I'll be pretty much done with radio until we move. I think it's time to attack the problem with some tech, hi or low I don't care...

Thanks!

Richard

Mail to:

Ah-ha! Design Group, Inc.
470 Cleveland Ave N
St. Paul, MN 55104
Attn: Richard

and/or fax to number in signature below. thanks.

Richard Hager

```
+ Ah-ha! Design Group, Inc.           -
+ Precision CNC Technology, since 1991 -
+ 612-641-1797, Fax: 612-641-8681       -
+ "I just like to build stuff" So...     -
+ for CNC info, don't email me, call      -
+ or email Ah-ha! directly.  Thanks!       -
+ www.gdic.com/ahha  email: ahha@gdic.com   -
```

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Steve Ellington <n4lq@iglou.com>
Subject: ODD Bulb Source
Message-ID: <Pine.GSO.3.93.961025075758.7934A-100000@iglou1>

W.W. Grainger is a source of unsual bulbs such as lumiline tubes for for Collins speakers and 6s6's for Johnson transmitters. They are nation wide and there order number is 1-800-323-0620. I just bought a new lumiline for my 75A4's speaker and am enjoying both the sound and light. I have the speaker setting on an upper shelf so it's clear lamp cast a warm,yellow glow over the 32V3/75A-4 beneath it.

Steve Ellington N4LQ@IGLOU.COM Louisville, Ky

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: tomrice@netcom.com (Tom R. Rice)
Subject: Re: ol' buzzards on D-104's?
Message-ID: <199610242319.QAA22637@netcom16.netcom.com>

> When I do get the rig on later this year, I'll be using
> an Altec type 633 Saltshaker mike instead of a D-104.
>
> Does this exempt me from the "Ole Buzzard" appellation,

since it _is_ a broadcast mike rather than a ham mike?

Just wanted to know......

73 de WB6BYH

--
"Start off every day with a smile and get it over with." --W.C.Fields
Tom R. Rice
tomrice@netcom.com
CIS: 71160,1122

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: pmills@A.crl.com (Phil Mills)
Subject: R388 saga and questions
Message-ID: <199610252302.AA21343@A.crl.com>

I've spent the last day or so working on an R-388 that I recently acquired. It came complete with cabinet and covers, and had been upgraded with the 51J4 mechanical filters and the Collins 4:1 spinner knob. I was pleasantly surprised to find the 4 Bristol wrenches on the inside of the top cover. One of the 2 tuning tools was also in the bracket on the side brace....the tool I have is the one for the trimmer caps....apparently the missing one is for the coil slugs. Anybody got an extra one?

This unit has been modified in several ways. The V102 6BE6 second mixer has been changed to a 6DJ8 dual triode. I have found mention of this mod in copies of articles on the R388. However, there are two mods I have not seen any info on and would appreciate help with. First, V114, the 6BA6 BFO has been replaced with a 6AS6, and secondly, the V103 6BE6 band 1 mixer has also been replaced with a 6AS6. Can anyone offer any rhyme, reason, or info on these mods.

Well, anyway, after a marathon session reforming the plug-in electrolytic and epoxying some coil slugs that broke off their hangers, I find that the thing works well, at least on the 20 meter band.

I removed the front panel today to clean it and the knobs thoroughly. BTW, Lacquer Stick from AES does a _wonderful_ job of refreshing the white pointer marks on those Collins skirted knobs. It also made the lettering and hash marks on the dial bezel look like new. I put on a new drum overlay from Ron Hankins, KK4PK, and it is really starting to look great.

Any info on the mods using the 6AS6's will certainly be appreciated.

thanks & 73,

Phil
Phil Mills, AB5TH **** Wanted -- 1957 ARRL Handbook *****
pmills@a.crl.com
713-992-5762
Friendswood, TX (south of Houston)

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Barry L. Ornitz" <u856010@eastman.com>
Subject: Re^2: Efficiency, stage gain, and distortion in "Grounded Grid"
Message-ID: <Pine.ULT.3.91.961025165816.1383A-100000@dua150.kpt.emn.com>

On Fri, 25 Oct 1996, Larry Kayser wrote:

> My unacceptable performance is easily within Barry's "quite well" level of acceptable performance.

Acceptable performance is low distortion to me, not stage gain. I am beginning to wonder if Larry is using soft tubes.

> With the tubes given, it is my experience that is is not possible to run them in DC grounded grid operation in Class A, AB1, or AB2, they draw appreciable DC Grid current with a tiny fraction of a Watt of drive.

No, not in truely grounded-grid, zero-bias operation. In cathode-driven operation, however, they work very well. In fact they work basically the same as in grid-driven operation but with the added internal feedback to lower stage gain and increase linearity.

> >You must state your
> >definition of efficiency, Larry, because if you define it as RF power out
> >divided by DC power in, the efficiency of cathode driven operation is
> >higher than with grid driven operation.
>
> A 4-1000 in GG requires 130W of RF to drive it to 950 to 1100 W RF output
> with between 3000 to 3700 VDC on the plates.

But if you run the tube in the same class, Class B, with the same DC input power, the output RF power will be somewhat lower. My guess will be around 65% efficient versus 68% efficient in cathode driven service. The difference is due to the converted drive power.

> This is with distortion being
> kept to a negligible level with linear detectors on the input and output and
> fed to X and Y of a scope.

I think I know what you mean here but you certainly did not state it correctly. I believe you mean the distortion was measured to be negligible at this power level. How can the detectors keep the distortion down?

> If you push the DC to 4500 or > you can get the
> output up to 1300 W of RF but the G1 will get fried very quickly.

This does not agree with Eimac/Varian's published characteristics. Look at the Eimac data I posted about two months ago for the 4-400 and 4-1000. Both the drive power and the grid current go down as the plate voltage is increased. From Amateur Service Bulletin AS-4 as I posted in the 8/22 Boatanchors Digest:

4-1000A

DC Plate Voltage	3000	4000	5000	volts
Zero-Signal Plate Current	100	120	150	milliamps
Single-Tone Plate Current	700	675	540	milliamps
Single-Tone Screen Current	105	80	55	millimaps
Single-Tone Grid Current	170	150	115	milliamps
Single-Tone Driving Power	130	105	70	watts
Driving Impedance	104	106	110	ohms
Load Impedance	2450	3450	5550	ohms
Plate Input Power	2100	2700	2700	watts
Plate Output Power	1475	1870	1900	watts

> The RF
> output includes some portion of the Drive which makes the stage gain down to
> around 8 db, hardly something to write home about. If you want to increase
> the distortion appreciably, in the order of 5% to 10% or more, which is
> distressingly large number of amateurs do, then you can get 1400 W RF output
> or a bit more in these conditions.

Distortion levels are not published in the above data unfortunately. In amateur service, Eimac generally aimed for 3rd order products at least 30 dB down. Stage gain does drop in cathode driven service. It has to - that is inherent in the way cathode driven service works. All I can do is repeat Bill Ross' information from Bill Orr. In Amateur Service Bulletin AS-6, Bill Orr (W6SAI), Ray Rinauldo (W6KEV), and Bob Sutherland (W56UOV) write:

"Measurements made on various tubes in the Power Grid Tube Laboratory of EIMAC showed than an improvement of 5 to 10 decibels in odd-order distortion products may be gained by operating various tubes in the grounded-grid {sic} configuration of figure 4A, in contrast to the same tubes operating in the grid driven mode. The improvement in distortion figure varied from tube type to tube type, but all tubes tested showed some order of improvement when cathode driven."

> Swamped Grid does not mean only the use of 50 ohm resistors in the Grid circuit. I have used as little as 2000 ohms to ground to give stable and totally repeatable performance with the 4-1000. The drive level was 4 watts RF for 1500W output or more, class AB1, at 4400V DC, at HF.

Under the same condition of 4400 VDC on the plates, in cathode driven service the tube would have developed about 1880 watts of output power for about 2700 watts input or about 69.6% efficiency. You do not state the input power for AB1 grid driven service so I cannot calculate the efficiency here. The drive power for cathode driven Class B in this case is around 90 watts. It sounds like you are equating stage gain with efficiency. Stage gain for the cathode driven circuit is 13.2 dB for this case. I would still like Larry to define exactly what he means by efficiency. My usage is RF output power divided by DC input power which most texts consider standard.

> >Likewise heavily swamping the grid with a low value of resistance in grid driven service reduces but again does not completely eliminate the need for neutralization.
>
> My statement was that if you swamp the grid you can get the amplifier to go stable. I have done this many times, load G1 down until I can get to work on only one problem at a time, if you have problems with parasitics. Once a parasitic is tamed, then raise G1 until you get to the next exciting moment. If the isolation of the amplifiers output to input is less than the gain you have a real neat TPTG transmitter and you can use the exciter for something else. I keep enough swamping to avoid the potential for that condition.

Try doing this at VHF which is above the tube's self-resonant frequency from the screen lead inductance and the screen capacitance. Neither grid swamping nor cathode driven operation work well here. But this has nothing to do with circuit efficiency or distortion. You _can_ tame the beast either way with complex enough neutralization.

Swamping the control grid down to the point where the excess drive power is dissipated in the resistor is common. If you have a 100 watt output exciter, you can go cathode driven or dissipate over 90% of that 100 watts in the swamping resistor - or modify your exciter, of course.

> I have modified probably several hundred of the 1625's in the mid 1950's and I never saw one with the connection made internally in the tube. I did read of this anomaly in the 1625 back then but I never saw one built that way, doesn't mean there are none, just means I never saw any of them. We got our 1625's mostly from surplus stores in Minneapolis MN and I think in Fargo, North Dakota. When we found a large supply of 837's locally we dumped the 1625's in any case.

I have no experience here. In my '57 handbook, there is a cathode driven amplifier circuit using 1625's. The section notes that the tubes must be modified and that not all 1625's were suitable. They listed a supplier of tubes that were suitable.

> I have just found a reference to this in one of my 1950 era notebooks.
> There were even some, repeate SOME 807's made with the two wire external
> connections, but not many in my experience. I had looked at this after a GG
> pair of 807's was described in QST.

I wonder how the new Sovtek and Svetlana tubes are made. Making the connection internally lowers the lead inductance and eliminates one glass-to-metal seal. Both are an advantage in the normal operation of the tube. The 813 is interesting in that it is a pentode and the suppressor grid is brought out to a pin. This enables suppressor modulation (not very linear but cheap!).

> I still do not like the DC GG operation of Eimac 4-n series tubes.

To each his own. If you have a typical SSB exciter of the Heath/Drake /Collins class, i.e. 100 watts output, and you do not want to modify the exciter for low power operation, cathode driven service is a good way to soak up the additional watts and get lower distortion too. With the current amateur rules defining maximum power output, efficiency (defined as RF output power divided by DC input power) is not too important but it is better with cathode driven service. In the days when the rules stipulated 1000 watts input power, the drive power was to be added to the DC power for input power calculations on cathode driven amplifiers. Only the DC power was used for grid driven amplifiers. This made for some interesting trade-offs.

The distortion issue is interesting in that most exciters of the vacuum tube era were in themselves not all that clean. Collins was perhaps the only manufacturer to include RF feedback to reduce distortion. Some gear was not even neutralized! In this regard, modern semiconductor rigs can be cleaner than the old gear (except for the fact that broadband capability has reduced the suppression of spurious outputs). Sweep tubes had hideous distortion levels when used as amateur output tubes. The venerable 6146 is far better but really nothing to brag about (3rd order around -22 dB if I remember Orr's data). The 807/1625 is worse than the 6146. Modern power grid tubes can achieve 3rd order distortion levels as low as -38 to -40 dB in comparison. Modern transistors designed for wideband CATV service can do far better still.

Measuring distortion by means of an X-Y display on a scope, it is extremely difficult to measure products even 20 dB down. A spectrum analyzer and a clean drive signal do much better. Eimac went to the trouble of combining two crystal oscillators, each amplified by rather husky amplifiers (extremely under-driven to keep them clean) to develop a clean enough two tone signal to test their tubes.

I suggest that anyone deeply interested in carrying this discussion further first read Eimac's "Care and Feeding of Power Grid Tubes" and Pappenfus, Bruene & Schoenike's "Single Sideband Principles and Practice".

73, Barry L. Ornitz WA4VZQ ornitz@eastman.com

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: Richard Hager <rhager@millcomm.com>
Subject: SAQ, and noise cancellation
Message-ID: <327027DC.1DE@millcomm.com>

Bob Ragain, 303-470-2534, RAGAIN@SEDALIA.OMNES.SLB.COM wrote:

>
> Fellow BA'ers,
> The Alexanderson Alternator, SAQ, experiment has been one of the most fun projects I've followed in a long time. Thanks to all for the observations and descriptions of your rx setups. Too bad SAQ shut down so early while the world continued to tweak. Wonder what the power bill was for that on-the-air time?

Hi Bob,

I have really enjoyed reading your posts on the SAQ. Besides your technical ideas, I enjoy your clear and entertaining writing style.

I am not a ham, but I've been restoring test equip for many years, so it was a natural for me to also go the 'test equip as rcvr' route. While I didn't hear SAQ, or even put in the same effort you did, it was still a lot of fun to work up various designs and test them. I ended up dusting off some old books like my '55 Terman, and I learned a lot of new stuff as well. Thanks again for sparking my interest with your posts.

> The loop antenna built for this project seemed to work well. It's 3 ft in

> diameter and 140 turns of number 24 (19 x 36) thinly insulated wire. Tuning
> for resonance was with 3 sections x 350 pF variable cap. Final version's
> tuning range was from about 15.5 kHz up to about 25 kHz.

Where did you get the design info for the loops? I have a '76 and '84 ARRL hbook, the Terman, and Doug Demaws book, and they all have less than a page on loops. The Terman doesn't have anything! Surprised the heck out of me. I figured that in '55 there'd be a whole -chapter- on loops.

Anyway, I'm very interested in getting a good treatise on loops. Anyone have any leads?

> Hope we get to do this again sometime!
> Bob

Yes to that!

In the spirit of being ready for the next time they spin that baby up, I want to run an idea past the group. It's probably already been mentioned or tried, but just in case it hasn't....

Aircraft commonly use those noise canceling mikes that have two sensors, one by the mouth and one down on the chest. The chest picks up the same noise as the mouth, but no voice. Differential 'em and away goes the noise, right?

So, what about using a second antenna, very small, in the same position as the main antenna so that the phase of the noise signals will be the same. But the small antenna won't pick up any SAQ. Differential 'em, balance the gains, and the noise should go away, SAQ should be left, right?

Did someone already try this during the SAQ event? Ever try it? Successful or not?

I've been thinking about if for a while because here in the city, even SWL is a chore. Incredible QRM every day and every night. Thus my interest in loops, noise cancellers, etc..

Thanks again to Bob and the BA'ers.

Richard

--

Richard Hager

+ Ah-ha! Design Group, Inc. -
+ Precision CNC Technology, since 1991 -
+ 612-641-1797, Fax: 612-641-8681 -
+ "I just like to build stuff" So... -
+ for CNC info, don't email me, call -
+ or email Ah-ha! directly. Thanks! -
+ www.gdic.com/ahha email: ahha@gdic.com -

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Sandy W5TVW <ebjr@worldnet.att.net>
Subject: Re: SAQ, and noise cancellation
Message-ID: <19961025132913.AAA9800@LOCALNAME>

At 03:55 AM 10/25/96 +0000, you wrote:
>Bob Ragain, 303-470-2534, RAGAIN@SEDALIA.OMNES.SLB.COM wrote:
>
>Hi Bob,
>
>
>Where did you get the design info for the loops? I have a '76 and '84 ARRL
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>the Terman, and Doug Demaws book, and they all have less than a page on
loops. The
>Terman doesn't have anything! Surprised the heck out of me. I figured
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>
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>leads?

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>Did someone already try this during the SAQ event? Ever try it?
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>
>I've been thinking about if for a while because here in the city, even SWL

is a
>chore. Incredible QRM every day and every night. Thus my interest in
loops, noise
>cancellers, etc..
>
>   Richard,
        The "second antenna" is a regular addition to a normal shipboard D/F
antenna system. The purpose of the 2nd antenna, usually referred to as a
"sense" antenna or "Vertical aerial" (In British terms), is not to cancel
noise, but to cancel out-of-phase
re-radiation of the signal by the ship's structure and rigging, which has a
tendency to distort the "figure of 8" pattern of the loop. It is also used
to modify the pattern of the loop from a "figure of 8" into a "cardoid" or
heart-shaped pattern to descern which
direction (from a possible two) the signal is coming from.
        I have used this scheme on an open "box" loop 24" on a side, for the
broadcast band. You introduce the "vertical signal" into the secondary of
the loop system via a variable capacitor, and it makes the "nulls" very,
very sharp and deep. Deep enough, in fact, so that I was able to completely
null a local station on 690 khz.
(New Orleans) and hear a station in Coffeville, Kansas on the same frequency
at night! The only station I couldn't null completely was WWL radio (local
50 kw powerhouse!) due to re-radiation coming from several sources. You can
use the
loop to 'null out' interfering noise sources provided that the sources are
not "legion" or coming from the same direction as the desired station.

73

E. V. Sandy Blaize, W5TVW
"Boat Anchors collected, restored, modified, traded & used!"
ebjr@worldnet.att.net
417 Ridgewoood Drive
Metairie, LA., 70001
{Still looking for: Hallicrafters SR-75, and 860 tubes!}

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: Sandy W5TVW <ebjr@worldnet.att.net>
Subject: Re: SAQ, and noise cancellation
Message-ID: <19961026005737.AAB28380@LOCALNAME>

At 09:14 PM 10/25/96 +0000, you wrote:

>That's amazing! Where did you obtain the design info for the loop? I would
>like to purchase such a book. One that has more than one page on loops....

>Anyone have a source or recommendation? Or any comments on the noise
>cancelling thing?
>
>Thanks,
>
>Richard
>
>--
>
>   Richard Hager
>
>+
It was designed "empirically". I think I used about 8 turns or so
of #22 p.e.
wire. The turns spaced about 1/4". The primary is just a tuned circuit
with a dual 365 pf variable cap. The secondary was 1 turn interwound with
center of the loop.
Three ball point pen barrels (Bic) with the "guts" removed, were used as
"spacers"
on each side of the loop between alternate turns, to reduce the distributed
capacity
and increase the overall "Q" of the loop. Note that the windings are not
wound so that the windings are a "pancake" or square spiderweb type winding,
but look like a square, very shallow box. I have also tried litz wire but
this doesn't seem to enhance results like it does on small coils or those
wound on ferrite rod cores.
There is some "loop" design info in "The Low and Medium Frequency Radio
Scrap Book" by Ken Cornell, W2IMB, 3rd Edition, pp. 42-48.
I'll be glad to supply the info. It's 7 pages. I'll need an SASE.

73,

E. V. Sandy Blaize, W5TVW
"Boat Anchors collected, restored, modified, traded & used!"
ebjr@worldnet.att.net
417 Ridgewoood Drive
Metairie, LA., 70001
{Still looking for: Hallicrafters SR-75, and 860 tubes!}

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: Richard Hager <rhager@millcomm.com>
Subject: Re: SAQ, and RTTY
Message-ID: <32704CD9.5E9C@millcomm.com>

John Kolb wrote:
>

> On Thu, 24 Oct 1996, Richard Hager wrote:
>
> > I failed as well. Used HP3580A 0-50khz spectrum analyzer with an added
> > connector for signal output. 80db of dynamic range on this puppy, and
> > 80db of @%#@$ electrical noise!

> If I remember correctly, that's the model that plots onto a CRT,
> using digital storage - Didn't realize it could be stopped for
> use as a receiver.

John, it has a manual scan mode and a knob on the front. An amazing unit really. The peak of technology for 'old' style LF specanalyzers. Resolution BW is 300, 100, 30, 10, and 1hz! (but you have to sweep sssllloooowwwwlllyy if the filters at 1hz. Like 100 seconds/div slowly !!). Strangely enough, they didn't originally include a BNC on it for signal output, weird huh? Every scope I've ever used, and the few RF specanalyzers I've used, have all had some sort of signal-out provision.

> Don't know about shareware - Software Systems Consulting sells
> several programs PC HF Facsimile, and I think PC SWL for
> around $99 - 149 which include a simple hardware module
> (op amp as zero crossing detector) and SW to decode RTTY, etc.
> The problem is the transmissions on VLF in the US seem to be all
> military, and are encrypted - msgs for submarines. VLF is used
> so the ships can receive it without surfacing.--

Thanks John,

It's more of a low-level interest for me, where I'd spend $20 on it, but for $150 I'd rather put it into test equip or something. I hear what you're saying about the VLF being encrypted. I should have mentioned that I'm mainly interested in the RTTY and fax, etc. that I hear all over the regular SW bands.

Richard Hager

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+ Precision CNC Technology, since 1991 -
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+ or email Ah-ha! directly. Thanks!   -
+ www.gdic.com/ahha email: ahha@gdic.com   -

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: Richard Hager <rhager@millcomm.com>
Subject: SAQ, loops, noise cancelling...

Message-ID: <32712E2F.7C6F@millcomm.com>

Sandy W5TVW wrote:

> Richard,
> The "second antenna" is a regular addition to a normal shipboard D/F antenna system. The purpose of the 2nd antenna, usually referred to as a "sense" antenna or "Vertical aerial" (In British terms), is not to cancel noise, but to cancel out-of-phase re-radiation of the signal by the ship's structure and rigging.

OK, I've seen the 'sense' antenna for loops before, but always interpreted it as being designed to pick up significant signal, specifically for the directional nulling purpose you mentioned.

Does anyone know if it's ever been designed/used in a minimal version, just to pick up local noise?

> I have used this scheme on an open "box" loop 24" on a side, for the broadcast band. You introduce the "vertical signal" into the secondary of the loop system via a variable capacitor, and it makes the "nulls" very, very sharp and deep. Deep enough, in fact, so that I was able to completely null a local station on 690 khz (New Orleans) and hear a station in Coffeville, Kansas on the same frequency at night!

That's amazing! Where did you obtain the design info for the loop? I would like to purchase such a book. One that has more than one page on loops.... Anyone have a source or recommendation? Or any comments on the noise cancelling thing?

Thanks,

Richard

--

Richard Hager

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From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Wayne Cronin" <wmc@postoffice.worldnet.att.net>
Subject: Re: SAQ, loops, noise cancelling...
Message-ID: <19961025222923.AAA5786@Bravo>

> Sandy W5TVW wrote:
>
> > Richard,
> > The "second antenna" is a regular addition to a normal shipboard
> > D/F antenna system. The purpose of the 2nd antenna, usually
> > referred to as a "sense" antenna or "Vertical aerial" (In British
> > terms), is not to cancel noise, but to cancel out-of-phase
> > re-radiation of the signal by the ship's structure and rigging.
>
> OK, I've seen the 'sense' antenna for loops before, but always
> interpreted it as being designed to pick up significant signal,
> specifically for the directional nulling purpose you mentioned.
>
> Does anyone know if it's ever been designed/used in a minimal
> version, just to pick up local noise?

There is a commercial product on the market right now that does
exactly that. The ANC-4, by JPS. It goes for $169 in the AES
catalog. (I don't have one - yet, but I'm considering it for my
VLF work.)

>
>
> > I have used this scheme on an open "box" loop 24" on a side, for
> > the broadcast band. You introduce the "vertical signal" into the
> > secondary of the loop system via a variable capacitor, and it
> > makes the "nulls" very, very sharp and deep. Deep enough, in
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> Thanks,
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> Richard
>
>
> --

```
>
>         Richard Hager
>
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> + www.gdic.com/ahha  email: ahha@gdic.com   -
Wayne Cronin   WA5VIF
wmc@worldnet.att.net


From boatanchors@theporch.com  Fri Oct 25 20:11:20 1996
From: Richard Hager <rhager@millcomm.com>
Subject: Re: SAQ, loops, noise cancelling...
Message-ID: <32714408.6FEB@millcomm.com>

Wayne Cronin wrote:

> There is a commercial product on the market right now that does
> exactly that. The ANC-4, by JPS. It goes for $169 in the AES
> catalog. (I don't have one - yet, but I'm considering it for my
> VLF work.)
>--

Thanks Wayne!  As an electronics manufacturer, I'd say that's probably a
fair price.  But... as an inveterate do-it-yourselfer, I bet we can build
such a think very very cheaply.  Anyone know if similar designs were
covered in a publication or book?

Thanks!

        Richard Hager

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+ for CNC info, don't email me, call      -
+ or email Ah-ha! directly.  Thanks!       -
+ www.gdic.com/ahha  email: ahha@gdic.com   -


From boatanchors@theporch.com  Fri Oct 25 16:09:10 1996
From: "JOHN A. KING (WA1ABI)" <JAK@SUD2.ED.RAY.COM>
Subject: Semi- and Super-Driven Cathodes
```

Message-ID: <01IB2CEYAQ7A90N1DS@SUD2.ED.RAY.COM>

Semi- and super-cathode topography can be applied to triodes as well as tetrodes. With semi-cathode drive, a portion of the driving signal is applied out of phase (wrt the cathode) to the grid; super-cathode grid drive is in phase. Either mode of operation can be effected by placing an impedance in the rf grid return of the 'grounded-grid' amplifier - positive Z (inductance) results in semi-cathode operation, negative Z (capacitance) yields super-cathode operation. The definitive article on the subject is in July, 1967 QST written by Bill Orr and William Sayer of Eimac.

73,
John King WA1ABI

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: lkayser@rideau.net (Larry Kayser)
Subject: Sender has no return address
Message-ID: <199610251202.IAA02139@mail.peterboro.net>

Bill K5LLK sent me the following to which I replied direct, he apparently does not have a reply address, thus sending reply via boatanchors...lk

>Larry,
>   The latest figures listed by Bill Orr W6SAI (Radio Handbook,
>Twenty-Third Edition) indicate that intermodulation distortion figures
>improve by 5 to 10 db for triod connected tetrodes in cathode driven
>grounded grid service over that of grid driven class-AB1 service. He
>states that, while figures vary from tube type to tube type, all
>so-called "grounded-grid" triodes and triode connected tetrodes show
>some degree of improvement in distortion figure when cathode driven as
>opposed to grid-driven service.
>
>   Bill K5LLK
>
>

Bill:

First I have great respect for Bill Orr and his work over many years. I think, and I have no access to your reference work, that the GG you describe may be with GG for RF and full DC on G1, G2 to achieve the kinds of performance you are describing. I neglected to include this condition, my error. The DC efficiency is still much worse as is the RF gain per stage.

Larry

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: "F r6fqHo!ht" <75121.100@CompuServe.COM>
Subject: Short comments vs real communicating
Message-ID: <961025054725_75121.100_IHV43-1@CompuServe.COM>

I also have been reading the mail with interest.
comments were made about those who want shorter QSOs responded fast and those who were in favor of longer QSOs took longer to respond!!   Interesting indeed. Perhaps those who don't like us long winded "buzzards" are not as busy and have the time to read the mail and respond immediately? I have noted with interest for about a week, but did not respond. Am I one of the "Ol buzzards?"   If so, Thanks!! I appreciate the inclusion, although I'm not on AM, just listen in when it reached Hawaii.

I have 6 kids, daughters 36 years old down to my 11 year old twin boys. I don't have the time usually to sit and write when it "moves me". Hell, its hard enough to drive to my shop and work on my Collins gear as it is. Some of it is collecting dust again.

I have to cogitate (a word for us old timers) a while before I can write. I guess I build up a "head of steam." (another item for us old timers?)

But, as Jack keeps warning us, (another "Ol buzzard"??) this forum is for tubes and related BA "equipment, and to a lesser extent how we utilize them. That makes this topic, a slightly bit more appropriate here I guess.

Regards from Hawaii,
Raymond J. Cote

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: Bob Roehrig <broehrig@admin.aurora.edu>
Subject: Some unusual stuff
Message-ID: <Pine.ULT.3.95.961025192353.11271C-100000@admin.aurora.edu>

Was looking in the garage for something and ran across a couple gems I forgot I had. Nope, neither one is for sale, but they are interesting. I picked them up at an estate sale of a ham who was also a broadcast consulting engineeer. One item was a G.R. "precision wavemeter" type 224. This is an absorption wave meter with plug-in coils in rather large wooden boxes. The unit has coils that cover 74 to 24000 meters, with charts to match.

The other unit is called a "Leroy M. Clausing type PBO crystal osc". Actually it is a single frequency hetrodyne freq meter. Inside was a hand drawn schematic that says "WGES checking unit". It consists of a 1360KC xtal osc (type 112 tube), an untuned buffer (type 322), and a hetrodyne detector (another 112). The buffer and the external signal both couple to the grid of this last 112, and you listen for a beat in the phones connected to the detector plate. The xtal is in an oven with mercury thermostat on the rear and a 8 inch tall thermometer on the front. The switching point is 50C. When the oven is hot and the relay is open, a 120 volt lamp lights on the front panel.

Anyway, my question is, does anyone have any old data showing anything about WGES / 1360 KC?

E-mail broehrig@admin.aurora.edu   73 de Bob, K9EUI
CIS: Data / Telecom   Aurora University, Aurora, IL

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Benjamin D. Hall" <bdhall@ghgcorp.com>
Subject: Re: SP-600 Cap Problem, Real?
Message-ID: <32713A9F.601B@ghgcorp.com>

n5off@w5ddl.aara.org wrote:

> I just rec'd a SP-600 JX-26, s.n. 11400 or so, made in 5-53.
> Bottom line, it has black tubular caps and works great. That is note a
> "by ear" judgement. I compared it to the records on my 390A and 725, and
> it is just shy of the performance of those on some freqs, and beats the
> Collins rigs by .1 uV or so on other freqs. Hot as a pistol.

Well, here is my five cents worth, even after this subject has been already asked and answered many days ago. (I'm running about 5 days behind in e-mail)

I have two SP-600-JX-17's with the Black Uglies in them. S/N 14468 works perfectly, without any problems at all save that the selectivity filters aren't well centered. Alignment might cure that... It is a really nice set. S/N 13610, the one I refinished the panel on and now looks great, has AVC problems from a shorted cap somewhere. Basically, in AVC mode there is no AVC and she blocks. Plus, the S-meter is a bit goofy but I think that and the AVC problem are the same thing.

I *do* have plans to recap both of them, and when I do I am going to test the pulls and see what I get.

Just another data point for you...

73,
Ben

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--
----------------------------------------------------------------------
 From the computer of            | Collector of fine firebottle
 Benjamin D. Hall, Houston Texas | equipment, as well as other things
 BDHall@GHGCorp.com -or-         | involving Earth, Air, Water, and
 BHall@GP802.JSC.NASA.gov        | Fire.
----------------------------------------------------------------------
 "When you clock the human race with the stopwatch of history, it's a
 new record every time."
```

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: n5off@w5ddl.aara.org
Subject: SP-600 Caps, I'm convinced
Message-ID: <493262@w5ddl.aara.org>

Thanks everyone for all of the words of experience. I went to the local shop today and bought a few bags of 1KV .01 and .022's for the project.

Not sure if I want to tackle the RF strip, though. I'd hate to bugger up a nice working set. Reminds me of those Briggs and Stratton recoil starters that we all took apart as kids. Could be fatal (if dad caught you, that is).

73 de tom

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Paul Bocci-CPB007" <Paul_Bocci-CPB007@email.mot.com>
Subject: SP600 RF deck
Message-ID: <Macintosh */PRMD=MOT/ADMD=MOT/C=US/@MHS>

Perhaps I am just luck but I had little trouble removing and re-installing the RF deck, once I figured out where the wires should be disconnected to free it. I removed one set of modules from the turret and left the turret turned so that the now empty location was by the contacts on the module. It was easy to tell when I found the empty spot by the lack of resistance as well as the lack of sound from the contacts rubbing. I suppose leaving the bandswitch in between two bands would work but I felt safer pulling the modules.

Now, replacing the bad caps once I had the RF deck out was another matter.

Thankfully, there is access from both sides but they are so tightly nested you have to do three or four at a time.

73 es ZUT
Paul, K9NO

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: mknudsen@lucent.com
Subject: Re: SP600 RF deck
Message-ID: <9610252237.AA04870@bock.ih.lucent.com>

With Halloween radpidly approaching, consider this:
Pay a night visit to the QTH of a known SP600 user,
while he's out. Pick the lock, open up his SP, remove
all the turret coils, and put them all back one band off relative
to the front panel indicator.

THen wait a couple days for his breathless posts -- "couldn't believe all hte hams and foreign BC on 10 and 6 meters! But all the BC stations are off the air in my state, so all I hear are spurious CBers and cordless phones!"

Noe that I would never suggest swapping around just one of the 4 stages worth of coils, like the oscillators...

Most Hammars look like jack-o-lantern faces anyway....73, mike k aa9rg

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: Spencer Petri <spetri@e-tex.com>
Subject: Super-Cathode driven amps
Message-ID: <m0vGqe9-0002GCC@e-tex.com>

Hello gang,

This method of driving ceramic tetrodes works very well. It takes about 80 watts of drive per tube, however, with the control grid strapped to the cathode. I run a HB 8930 GG 2 mtr super-cathode driven amp. With 80 wts of drive and 2400 VDC it runs around 500 wts of carrier output. The same tube has been used for several years.

The drive required can be lessened by tapping down on the input network with the grid. I have never built this way so I don't know from experience.

73 de Pete WA5JCI

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: "F r6fqHo!ht" <75121.100@CompuServe.COM>
Subject: Surplus manuals
Message-ID: <961025054736_75121.100_IHV43-2@CompuServe.COM>

Hi Paul!

<< Now, if I could just get my Vol. II back from Raymond Cote, I'd be all set..... >>

I don't know why the list was pinged about the book. An e-mail to me to send it back as a reminder would have worked better.   Send me your address, as I have not been able to find it. Your book has been in an envelope for 3 weeks.

Ray

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: jproc@bellglobal.com
Subject: Tube Source
Message-ID: <Chameleon.4.01.2.961024191321.jproc@>

Dear BA'ers,

The following insert appeared in the Sept 96 issue of QST:

DO YOU NEED VACUUM TUBES?

Bob, AF6V, operates a tube bank, making tubes available to all hams for payment of shipping costs or picked up at his San Diego home at no cost. Donations of your unwanted tubes are solicited, to expand the bank, but are not nesessary for a 'withdrawal'. Bob currently has 22,000 tubes that have been checked and are ready to ship; most are new in the box. You can get a list of available tubes from either the WB6BDY BBS, Radiosport!, at (619) 279-3921 or on the HQ Hiram BBS at (860) 594-0306. The tube list is also available on the America On Line Ham Fourm. Select 'radio' as the key word, then 'ham'. If you can't obtain the list from either of these sites, send an SASE to:

Bob Wentworth
AF6V
4804 Huron Ave.
San Diego, CA
92117

Regards,

Jerry Proc VE3FAB
E-mail: jproc@bellglobal.com
HMCS Haida Naval Museum
Toronto, Ontario
'Looking for a 'AN/SRC-501'

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Allan Fritsche" <fritsche@msn.com>
Subject: Variac Connections
Message-ID: <UPMAIL03.199610260030170579@msn.com>

Hi Gang, a quick question on Variac connections. I got a little Model V5 at the Humble Ham fest and tonight was getting around to see if it worked. Alas it didn't or did it?

Last guy I used had a outlet box, similar to the ones in your home and it was a nobrainer. This one has all these indepent connections.

Bottom line, just want to use it to gently restore old boats.i.e. bringing the voltage up from 50 to 125V, etc.

Connections are as follows 2 and 4, look like the primary coil, between 1 and 2 suggests 20VAC , as 4 and 5. Vane is at 3. Output ? 6 and 7.
Am I correct.

If so the vane has to have voltage on it to regulate, should I put the Hot side of the line to the vane or what?, unit has no breaker or fuse.

HELP, HELP, HELP...
your friend Al
fritsche@msn.com

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: Richard Hager <rhager@millcomm.com>
Subject: Re: Variac Connections
Message-ID: <327156DD.48D1@millcomm.com>

Allan Fritsche wrote:

> Connections are as follows 2 and 4, look like the primary coil, between 1 and 2 suggests 20VAC , as 4 and 5. Vane is at 3. Output ? 6 and 7. Am I correct?
>
> If so the vane has to have voltage on it to regulate, should I put the Hot side of the line to the vane or what?, unit has no breaker or fuse. HELP, HELP, HELP...--

Whoa hoss! Slow down Al. Do NOT attach the incoming to the 'vane' !!

I presume that by 'vane', you mean the wiper on the back end. And maybe I should ask this too: By 'variac' do you mean a rotary variable xformer? Just making sure we're talking about the same thing.

I don't have one in front of me right now to give you the exact pin numbers, but I did want to make you aware of two things:

a) The wiper is the variable OUTPUT.

b) They are NOT ISOLATED !!!. You used the word 'primary' in your post, implying that you thought there was a secondary too, so I thought I should point this out.

Variacs are adjustable 'autotransformers'. They do NOT isolate your equipment from the line. Probably not an issue for what you are using it for, but I wanted to make sure you knew. Want to keep you around for a while more...

Generally, the variac is fed with 115vac and produces a 0-140vac output. Turn the knob all the way 'down'. Find that connection. That's your neutral. Turn it up to about 2/3. That's your 'hot' input. The wiper is your output.

You can also connect most of them with the incoming line across the full winding, in which case you only get 0-115 out. That also may be fine for your intended use.

I saw someone selling a variac a week ago that he said was a 220v model 'that could be wired for 115'. Maybe he meant it could be -used- on 115, or maybe he meant that there really was two windings side by side. I've never seen one that required you to 'choose' 115 or 220. All the ones I've used just have a single winding on them.

Hope this helps.

Please note that the connections I've just given are only my personal opinion from my usage of similar devices. You are responsible for safe connection and usage your own device before plugging it in.

Richard Hager

+ Ah-ha! Design Group, Inc. -
+ Precision CNC Technology, since 1991 -
+ 612-641-1797, Fax: 612-641-8681 -
+ "I just like to build stuff" So... -
+ for CNC info, don't email me, call -
+ or email Ah-ha! directly. Thanks! -
+ www.gdic.com/ahha email: ahha@gdic.com -

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: "Joseph J. Curry" <71407.1774@CompuServe.COM>
Subject: Re: VFO Gasket for Ranger
Message-ID: <961025225309_71407.1774_FHV50-2@CompuServe.COM>

Jack:

Check the current Antique Electronic Supply catalog. They sell a U-shaped gasket that fits the bill nicely. It is sold by the foot. Not cheap, but makes an exact replacement. I don't remember which one it is, but if you measure yours and see which one is the closest, you'll be in good shape. By the way, I coated it with Armorall (a light coat) before installing to help preserve it. You'll need 3 feet as the perimeter is about 30" as I recall.

By the way, I believe they have 1614 tubes as well (not cheap either, but available).

73,
Joe
K3ICO
AMI #721
71407.1774@compuserve.com

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: MODSTEPH@ACS.EKU.EDU
Subject: Viking luck
Message-ID: <01IB1BOSN97600B5R3@ACS.EKU.EDU>

Today I was looking for that indicator light (120 V, 6W, pear-shaped, base like a night light bulb) that goes with the TRANSMIT toggle on the Viking II, that is on with the B+ to the finals.

I went to several specialty lighting stores, the usual discount places with their walls of bulbs, all to no avail. Then I went to the store equivalent of a BA, our Ace hardware store where you can still buy one of something (nut, machine screw, lock washer, e.g.). I showed the guy the old one and he took me to their collection of bulbs, including the elusive 6S6 indicator bulb: just what I needed. I bought two...

...and I had been thinking about rewiring the thing for a 6V bulb. Pleasant surprise!!

73, Al N5AIT
modsteph@acs.eku.edu
Allan Stephens
Richmond, Kentucky

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: pmills@A.crl.com (Phil Mills)
Subject: Re: Viking luck
Message-ID: <199610251111.AA18763@A.crl.com>

> I went to several specialty lighting stores, the usual discount
> places with their walls of bulbs, all to no avail. Then I went to
> the store equivalent of a BA, our Ace hardware store where you can
> still buy one of something (nut, machine screw, lock washer, e.g.).
> I showed the guy the old one and he took me to their collection of
> bulbs, including the elusive 6S6 indicator bulb: just what I needed.
> I bought two...

Allied electronics has them in their catalog. Also, while looking for another bulb at a local Radio Shack, I came across the 6S6 also....

73, Phil

Phil Mills, AB5TH   *****   Wanted ---   1957 ARRL Handbook   *****
pmills@a.crl.com
713-992-5762
Friendswood, TX   (south of Houston)

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: drhydro@ames.net (Paul Nelson)
Subject: Where's Bob, WB4MNF?
Message-ID: <v01540a00ae9600ba1342@[1.1.1.1]>

Anyone know how to reach Bob Duckworth, WB4MNF, in Atlanta? He mentioned that his email access was going away.. and apparently it did (both rmd@ka4ybr.netmha.com, and bob@atl.org- according to qth.bafolks)- cause I haven't been able to reach him.... he's suppposed to be a-sendin' me a GRC-9, but I haven't heard anything- and we'd both be upset if it's gotten lost!

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Paul Nelson W5GNF               "When I go, I want to go quietly, in my
Ames, Iowa                       sleep, like my grandfather- not
                                 screaming, like his passengers."
(DrHydro@ames.net)
                                 "More hay, Trigger?"
 Cessna 140 N77149               "No thanks, Roy, I'm stuffed."
```

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: cmthomp1@facstaff.wisc.edu (Clark M. Thompson)
Subject: Woops!
Message-ID: <199610252026.PAA69396@audumla.students.wisc.edu>

Sorry folks. Somehow I managed to re-send Mike's message on HRO product detectors to the whole group...

73,

Clark, KD9QI

cmthomp1@facstaff.wisc.edu

From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: mknudsen@lucent.com
Subject: WORLD RECORD AC Bypass Caps
Message-ID: <9610251609.AA04341@bock.ih.lucent.com>

We've talked about how overdesigned bypass caps from the AC line to chassis often give us nasty zaps, can burn out antenna coils in rx, draw sparks from the ground line, etc.

Well, I think I found the biggest ones yet in an rx -- 0.565 mF in a Navy RBL-4 VLF regen set. One oil-filled bathtub cap on each side of the line. This set was drawing yellow-blue flaming sparks to ground and gave me a screaming bite once when I screwed up the antenna and power connecting sequence. Those caps are now disconnected.

Anyone ever found more than half a mike per side? And we thought the Super Pro's 0.25 and the R390 were gross....73, mike k aa9rg

From boatanchors@theporch.com Fri Oct 25 20:11:20 1996
From: k7yha@juno.com (Richard H. Arland)
Subject: WTB: Halli HT-44/HT-45
Message-ID: <19961025.210816.4399.0.k7yha@juno.com>

Gang:

Just located a SX-117 receiver. It will be here Friday.

Now I need to find an HT-44 transmitter and the companion HT-45 Linear
Amp (the one we had in college said "Loudenboomer" on the front panel, but the
Dachis book says that the HT-45 and the "Loudenboomer" were two
different amps).

Looking for good units that are cosemtically 8 - 9 on a 10 pt scale and
haven't been butchered by some "Mod Squad" in a past lifetime.

73 rich K7YHA

(717) 825-5395 anytime...machine on 24-7

From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: spr@earthlink.net (Scott Robinson)
Subject: WTD Halli SX100 manual and schematic
Message-ID: <v01530501ae95a5a2e188@[153.34.197.79]>

This is cros-posted from rec.atiques.radio+phono. Bug him, NOT ME!!!

Subject: Wanted:manual/schematic for Hallicrafter SX-100
From: Richard D'Avy, rdr@lmtonline.com
From boatanchors@theporch.com Fri Oct 25 07:04:56 1996
From: Hadley Allhands <had@halcyon.com>
Subject: WTF:W-J/CEI IFD Modules
Message-ID: <Chameleon.4.01.2.961024210952.had@.halcyon.com>

Looking for Watkins-Johnson/CEI IFD-xx IF modules that fit the DM-4C.
Thanks

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Name: Hadley Allhands, K7MLR
E-mail: had@halcyon.com   hadley@arva.com
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-----
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From boatanchors@theporch.com Fri Oct 25 16:09:10 1996
From: "Joseph J. Curry" <71407.1774@CompuServe.COM>
Subject: Yet Another Ranger VFO Problem
Message-ID: <961025172807_71407.1774_FHV44-2@CompuServe.COM>

Fellow Enthusiasts;

A few months back I solicited some information on a Ranger VFO calibration problem I had encountered. True to form, I received some great tips from the Boatanchors crew. I now need to tap the wellspring of knowledge once again.

For the last few weeks, I have been tearing my hair out (which I can ill afford) trying to find a problem with a new amplifier I built for 10-80-40. It uses the Ranger (I) as the rf and audio exciter. The problem was seen (heard) by non-local stations on the receiving end. They would hear, during a QSB fade, a raspy, hum-like note somewhere around 120 cps. Local stations normally could not hear the problem unless the band was long and my signal level was down and band fades made the problem obvious. I was not a happy man and I tore the amp apart measuring ripple and listening in any receiver I could find, but to no avail.

Last night in a QSO with a few of the local 75 meter AM crowd, one of the fellows (W9FGJ) reminded me of a previous conversation regarding a low frequency fm-ing of the carrier. He suggested I switch to xtal control, and voila, the problem disappeared. The VFO in the Ranger 1 was fm-ing; the xtal oscillator was not.

I know there have been numerous posts on this listserver regarding Ranger VFO problems such as drift and fm of the signal. Looking at the schematic one possible cause could be heater-to-cathode leakage in the 6AU6 VFO tube. As you fans are probably well aware, taking the VFO apart in the Ranger is not a simple task (lots of screws in strange places). Before digging into the innards of the VFO, I would like to find out if others have encountered this problem and what they found (better yet, how they fixed it).

One other issue that may be involved is that I notice when on xtal control that when I unkey the Ranger I can still hear the xtal oscillator until I switch the xtal switch to a blank position and kill the oscillator. When I switch back to the selected xtal, the oscillator is not running. When I rekey the Ranger, everything works fine until I unkey and the problem repeats. This is likely in the grid block keyer circuitry. I only adjusted it for chirp-free operation and it may not be set correctly to kill the oscillator. As I recall, the grid block keying "blocks" the VFO (V1), the osc-buffer (V3), and the multiplier (V4). i don't think this is related to the fm-ing, but I am throwing it in just in case.

Possible problems:

(1) the 6AU6 is bad (cathode-to-heater)
(2) the 0A2 is bad (not likely, but possible)
(3) ripple in the bias supply (not likely since this supplies bias to other stages plus the modulator
(4) ground loop in the VFO
(5) keyer operating as a multivibrator?
(6) ________________ (fill in the blanks)

The VFO is pretty simple. I am open to any and all suggestions. I would like to tackle this problem this weekend and put it to bed once and for all!

Tnx es 73,

Joe
K3ICO
AMI #721